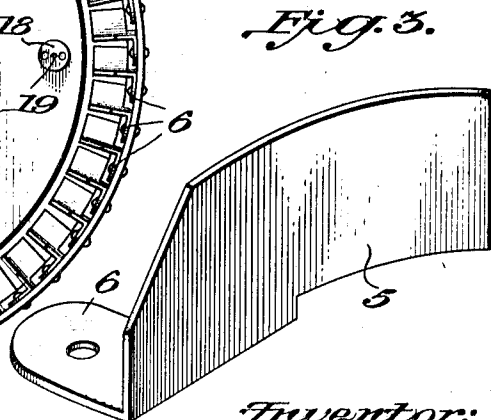
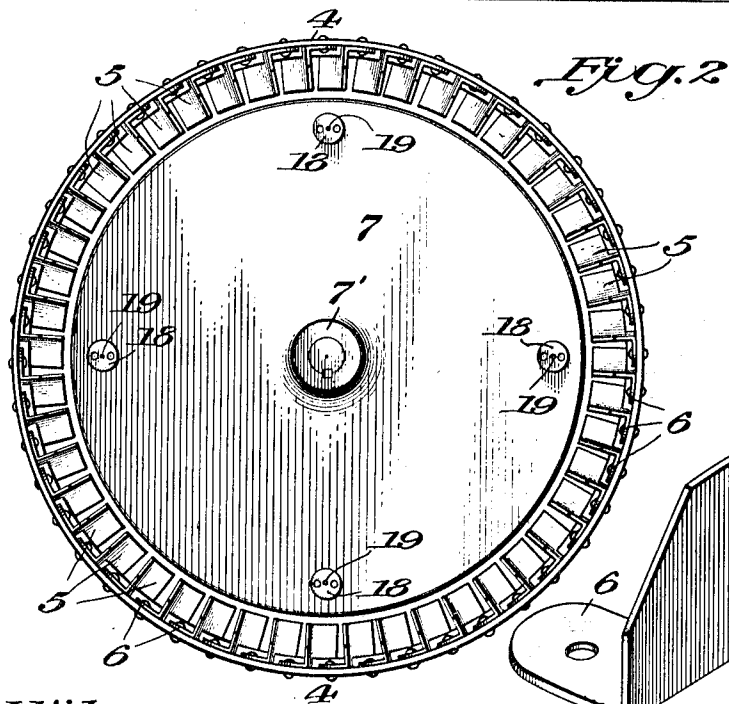
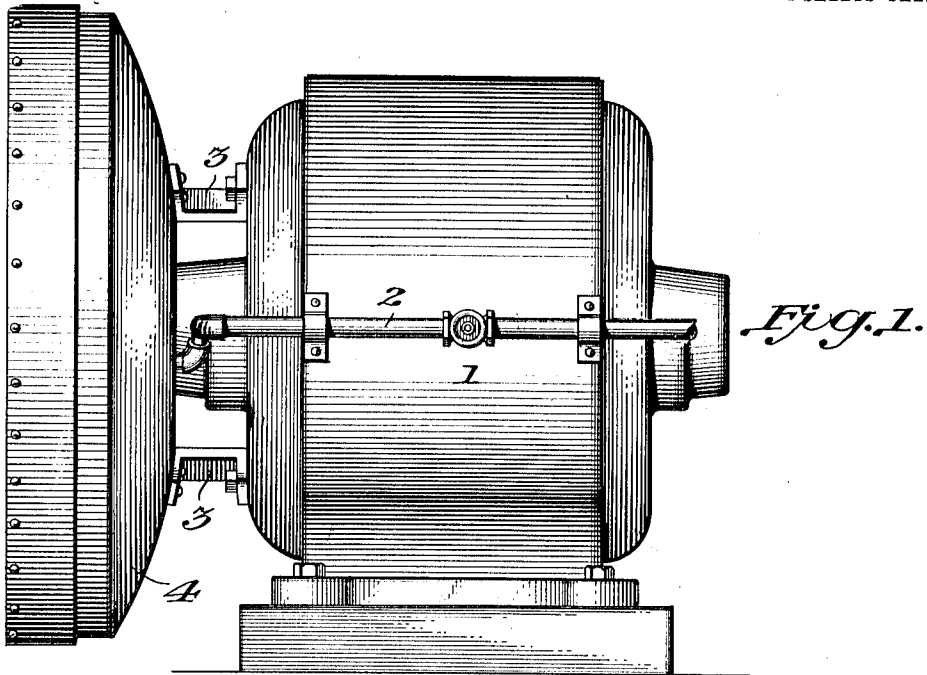


H. H. CLARK.
CENTRIFUGAL HUMIDIFIER.
APPLICATION FILED SEPT. 10, 1912.

1,040,885.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.



Witnesses:
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Ralph W. Ecker.

Inventor:
Harold H. Clark

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2 SHEETS—SHEET 2.

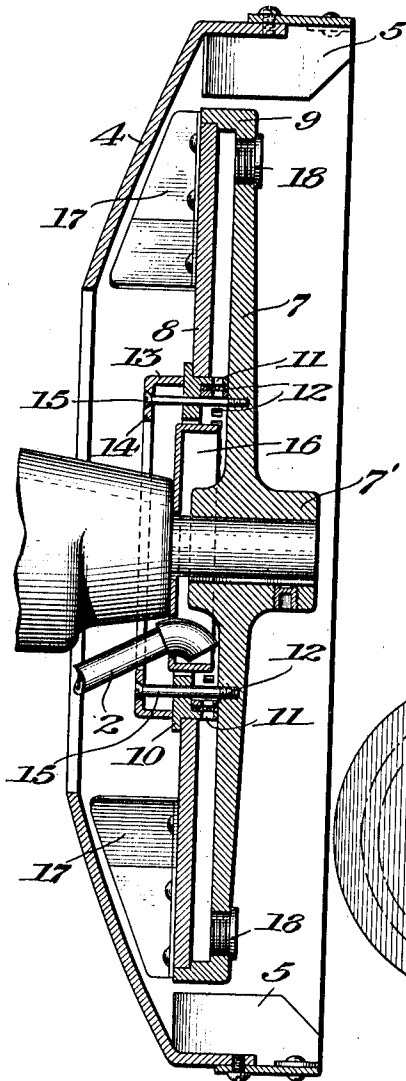


Fig. 4.

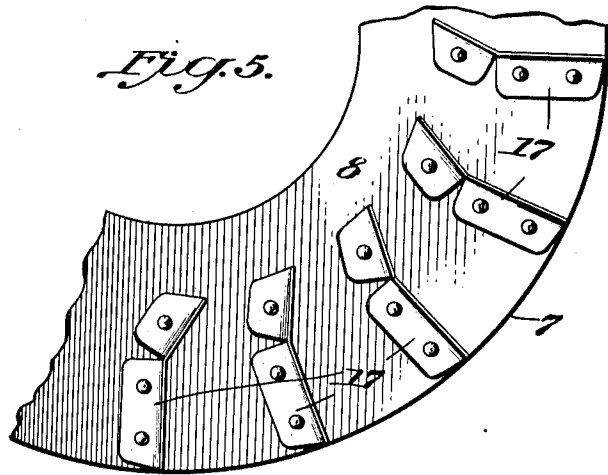


Fig. 5.

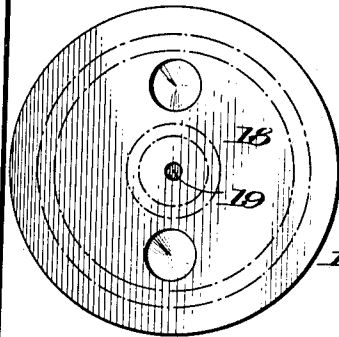


Fig. 6.

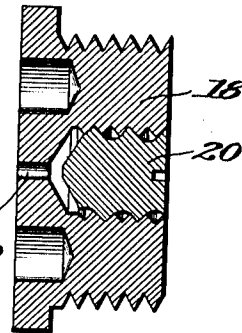


Fig. 7.

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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL HUMIDIFIER.

1,040,885.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed September 10, 1912. Serial No. 719,692.

(DEDICATED TO THE PUBLIC.)

To all whom it may concern:

Be it known that I, HAROLD H. CLARK, a citizen of the United States, residing in the city of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Centrifugal Humidifier, of which the following is a specification.

Be it also known that I am an employee of the United States Government, in the Interior Department thereof, and in immediate employment in the Bureau of Mines, and that the invention set forth in the following specification is given to the public that it may be used by the Government, or by any of its officers or employees, or by any other person in these United States without payment to me of any royalty thereon, under the provisions of act of March 3, 1883; R. S. 4886.

The object of my invention is to provide a device capable of producing a spray of watery vapor of exceptional fineness so as to be readily taken up by currents of air and carried by such currents to thoroughly disseminate throughout spaces to be ventilated, more especially the cuttings and galleries of coal mines.

The object of the invention is also to provide a device producing a cylindrical current of air and to throw into such current a spray of water vapor of such fineness as to thoroughly mix with the air current and be carried thereby.

The preferred embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 shows a side elevation of the humidifier and attached motor. Fig. 2 is an end view from the left of Fig. 1. Fig. 3 is a detail of one of the guide vanes secured to the inner rim of the casing. Fig. 4 is a view of a section on the line 4—4 in Fig. 2. Fig. 5 is a detail view of fan vanes on the rear of the rotating disk. Figs. 6 and 7 are respectively an end view and a section on the line 7—7 in Fig. 6, of the spray nozzle.

Referring to the drawings, 1 indicates a motor of any preferred form, though an electric motor such as shown is preferred by reasons of its compactness and portability, 2 is a water supply pipe and 3 are brackets arranged on the motor casing to sustain the

fan casing 4. This fan casing, as shown, is of a frustoconical shape and open at each end, the intake being the end next to the motor. 5 are air vanes arranged around the inner end of the casing 4 at spaced intervals as shown in Fig. 2. Each vane is provided with an offset 6 for attachment to the casing to permit the vanes to lie along radial lines. These vanes are of sheet metal and are slightly curved to take the current of air set up by the fan and direct the same in straight lines outwardly from the casing, thereby forming a cylindrical current. The fan comprises a hollow disk formed of two circular plates 7 and 8, the plate 7 having a hub 7' by which it is secured to the motor shaft 1'. The plate 7 has an integral flange 9 formed on its periphery and such flange is recessed to receive the edge of the plate 8, the two plates being spaced apart from each other to provide an interior space. The disk 8 has a central opening having a diameter of about one third the diameter of the disk, and a strainer ring 10 is arranged to seat in such opening. This ring has a perforated flange 11 which extends inwardly to the inner face of the disk 7, and a wire screen is held against such perforated flange by a spring ring 12 also perforated. The disk 8 is held against the disk 7 and the strainer ring 10 is held in the opening in the disk 8 by a binding ring 13 which has an inwardly projecting flange 14 perforated to receive screw bolts 15 which are tapped into the disk 7. The discharge end of the water pipe 2 is carried through the binding and strainer rings 13 and 10 and a guard and splash cup 16 is provided to fit loosely around the motor shaft and within the strainer ring and also about the discharge head of the water pipe. Fan blades 17 of the shape shown in Fig. 5 and of sheet metal are secured on the rear face of the disk 8, the blades being so arranged that on rotation of the motor shaft and disk air will be drawn in from the center of the casing and discharged peripherally over the edges of the rotating disk.

Provision for the discharge of the water in the form of a very fine spray is made by the spray nozzle plugs 18, of which any desired number, four in the present instance, may be employed. Each nozzle is made of

a brass plug threaded into the disk 17. Each plug is centrally perforated with a spray outlet 19, and the flow of the water to such outlet is controlled by a threaded stopper 20, a double thread being cut in the central opening of the plug and the corresponding thread being omitted or cut away from the stopper to provide a passage for the water.

10 In operation water at ordinary pressure is discharged from the pipe 2 within the guard cup and flows over the edges of such cup within and through the strainer ring to the space between the disks, which latter are re-

15 volved at a speed sufficient to produce by centrifugal force a water pressure of approximately 225 lbs. per square inch near the edges of the disk such pressure being sufficient to force the water in a very fine

20 spray from the outlet 19, such spray being thrown outwardly to mix intimately with the cylindrical current of air produced by the fan blades and to be borne thereby as

25 sages in a coal mine, or other spaces to be ventilated.

Having thus described my invention, I claim:

1. A centrifugal humidifier comprising a hollow disk having a central opening for the admission of water and carrying a set of spray nozzles adjacent its outer edge, said disk also having secured thereon a set of fan blades, a casing surrounding said disk and carrying a set of air vanes arranged about the edge of the disk, and means for rotating the disk.

2. A centrifugal humidifier comprising a hollow disk having a central opening for the admission of water, said disk carrying on one side a set of spray nozzles and on its reverse side a series of fan blades, a frusto-conical casing arranged about said disk, said casing carrying a circular series of air vanes surrounding the outer edge of the disk, and means for rotating the disk.

In testimony whereof I have affixed my signature in the presence of two witnesses.

HAROLD H. CLARK.

Witnesses:

L. C. ILSLEY,
RALPH W. CROCKER.